



State of Nevada – Department Of Personnel

CLASS SPECIFICATION

<u>TITLE</u>	<u>GRADE</u>	<u>EEO-4</u>	<u>CODE</u>
SUPERVISOR III, ASSOCIATE ENGINEER	40*	B	6.209
OPTIONS:			
<u>Department of Transportation</u>			
A. Construction Division			
B. Environmental Services Division			
C. Location, Photogrammetry and Cartography Division			
D. Maintenance Division			
E. Materials and Testing Division			
F. Operations Analysis Division			
G. Road Design Division			
H. Safety Engineering Division			
I. Structural Design Division			
J. Districts			
<u>University of Nevada</u>			
K. UNR - Electrical Engineering Department			
L. UNLV - Facilities Management			

Under direction, perform, within the assigned option, engineering work requiring considerable professional training and experience demonstrating the capacity to perform at a high level of competency; supervise professional and/or technical employees. Work requires the frequent interpretation of policies, procedures and guidelines and discretion in selecting appropriate resources to use in accomplishing assigned work.

Positions at the Supervisor III level supervise professional and/or technical engineering employees. Incumbents perform engineering functions requiring the exercise of judgment in the analysis of complex data and the application of recognized concepts and principles to difficult problems that impact daily operations, recommendations and the development of new policies, procedures and organizational areas or services. Activities consist of duties that result in significant portions of decisions made in conjunction with others. Positions at this level deal with management at a higher level at or above the supervisor's level and includes both internal and external contacts for the purpose of negotiating solutions to major and/or controversial issues within policy guidelines.

ALL OPTIONS

Perform supervisory duties to include training subordinate personnel in the correct application and use of the department's policies and procedures; assigning and reviewing work; and conducting employee evaluations and taking corrective action if needed.

Coordinate project activities between divisions within the department, local governmental entities and other State and federal agencies to ensure goals and objectives are being met; provide technical assistance to staff to ensure projects/assignments are completed within appropriate time frames and are in compliance with federal and State regulations and departmental policies and procedures.

*** Reflects a 2-grade, special salary adjustment authorized by the 2001 Legislature to improve recruitment and retention.**

ALL OPTIONS (cont'd)

Attend meetings, public hearings and court proceedings to represent the department regarding engineering issues and receive input from the meetings; ensure that issues discussed are acted upon in a timely manner with proper follow-up completed by written correspondence.

Assist in budget development by recommending operational needs and other pertinent cost factors and preparing draft budget requests for review and approval by management.

Perform related duties as assigned.

DEPARTMENT OF TRANSPORTATION

Materials and Testing Division

Geotechnical Branch: Plan, organize and supervise geotechnical engineering analysis and design for engineering structures and geotechnical problems by conducting field investigation and testing; performing geological, hydrological and geophysical studies; performing laboratory testing; defining problems and determining solutions; preparing and submitting reports on the nature of the problems, results of testing, solutions, and final design and recommendations; reviewing final plans and specifications; establishing construction criteria; troubleshooting construction problems; and monitoring the behavior of the structure after construction.

Plan, organize, supervise and evaluate the operations of the Geotechnical Laboratory by establishing priorities of testing to be conducted; directing lab personnel in the type of testing to be conducted; determining engineering parameters to be used in more complex tests; training personnel in soil and rock testing; analyzing final test results to predict the behavior of soils; contacting agencies which have requested tests and making recommendations based on test results; and directing lab personnel in conducting field testing, sampling, installation and monitoring of field geotechnical instruments.

Review and check engineering calculations, plans and specifications for accuracy and compliance with State and federal guidelines for work performed within the department and work generated by consultants for the department.

Develop computer applications; write computer programs for the section to conduct engineering analysis; and conducting computer applications related to engineering analysis.

Pavement Testing: Perform research and investigations functions to ensure that testing methods and procedures meet engineering specifications; analyze and make recommendations for alternate methods for pavement rehabilitation; analyze mineral aggregate properties relative to their engineering properties; provide information to field personnel relative to the engineering properties of new additives and extenders; design, develop and prepare detailed work plans for new and experimental construction materials; evaluate the performance of projects which have been constructed using standard specification materials; evaluate the performance of projects which have been constructed using new or experimental construction materials; and review, evaluate and make recommendations on all bituminous mix designs.

Write research and investigations reports which describe material engineering properties, constructability and performance issues.

Research contract documents, laboratory test reports, field test and inspection reports; participate in meetings to formulate equitable settlements of contract claims; and review and make recommendations on contract change orders.

Structural/Chemical Branch - Structural Inspection Section: Manage the Non-Destructive Testing Section operations of the division; oversee the structural steel fabrication inspection and testing functions; approve or

DEPARTMENT OF TRANSPORTATION (cont'd)

Materials and Testing Division (cont'd)

Structural/Chemical Branch - Structural Inspection Section (cont'd)

reject all structural steel materials and fabrication; perform the most complex and problematic non-destructive inspection activities; review and recommend changes to fabricators' shop drawings; represent the department on all contract claims and litigations within the non-destructive area; audit federal aid certification acceptance projects and State projects; and establish corrective measures on non-compliance work.

Perform research and investigation functions by researching and developing specifications for structural steel fabrication and erection, pre- and post-tensioning inspection, epoxy coated reinforcing steel inspection and structural steel painting; researching new products, methods and techniques in the non-destructive testing area and implementing those that will improve efficiency of operation; investigating and recommending approval or rejection of structural steel paint and epoxy coating materials proposed for inclusion on approved product list; evaluating and applying the results of research work done by others in the area of non-destructive testing and inspection; and conducting investigations of problem areas.

Road Design Division

Plan, organize and direct the work of design squads in either the Roadway Design Section or the Traffic Design Section of the division.

Roadway Design: Coordinate the flow of information from other sources by scheduling meetings with other agencies to gather information needed to design and prepare plans for bidding purposes and scheduling and conducting in-the-field studies, such as preliminary design field studies, mid-month field review studies, and final review studies.

Supervise design squads by guiding the design engineer and squad in meeting the design requirements of the State and the Federal Highway Administration; guiding the design squads in the proper application of policies and procedures and helping them to correctly interpret federal and State manuals and publications used in design; keeping subordinates informed of changes in personnel rules, regulations and benefits; selecting, interviewing, and recommending the hiring of personnel to fill job vacancies; keeping subordinates informed of changes in the design of projects; overseeing on-the-job training of new employees; and approving leave time requests.

Maintain the project schedule throughout the design phase and review projects by checking project plans to ensure that all information is provided and complies with standards.

Traffic Design/Sign and Pavement Marking: Plan, organize and supervise the design and review activities involved in sign and pavement marking layouts to ensure that proper delineation is provided and that the correct color and placement meets established policies and procedures; review traffic control plans for correct use and correct numbers of signs, barricades and delineators; perform capacity analysis to determine present and future needs pertaining to intersection and geometric design; and perform field reviews and inspections of sign installations and pavement markings to ensure proper placement and delineation and to determine the visual impact to motorists.

Traffic Design/Signal and Lighting: Plan, organize and supervise the operation of the signal and lighting section; direct interaction activities with local governments by reviewing and approving designs on State facilities required by the State and local entities including modifications to existing systems; ensuring designs meet standards; and writing interlocal agreements regarding engineering, construction, payments and schedules for signal and lighting installations in order to ensure the legal responsibilities for all parties

DEPARTMENT OF TRANSPORTATION (cont'd)

Road Design Division (cont'd)

Traffic Design/Signal and Lighting (cont'd)

involved are clear and concise. Direct interaction with consultant engineers by reviewing and approving designs on State facilities and those systems required of private citizens and developers where access to State roadways require the construction of a signal system; and design traffic signal and lighting systems for inclusion into plans and specifications.

Review industry products, specifications and technology; receive input from manufacturers and suppliers of new signal and lighting products and power sources and supplies for use on State projects; and provide information to the department's in-house Research Evaluation Committee on new products to be tested for eventual State use.

Districts

Plan and organize the work and training of professional and technical employees engaged in surveying, inspection, office procedures and testing of materials to ensure adherence to contract plans and specifications; direct changes to the contract plans and specifications through contractual modifications by an approved contract change order or supplemental agreement; manage the construction field office; authorize payments to the contractor for items of work and materials incorporated into a project that meet specifications and quality control requirements; reject non-specification materials and/or work and assess liquidated damages for materials and working days; and monitor contractor work force wage rates to ensure compliance with federal and State wage and salary regulations.

Coordinate contractors' scheduling of personnel with department staff and construction activities and prepare written correspondence to notify divisions within the department and contractors of all pertinent construction activities.

Participate in final inspections when the contractor has completed contractual requirements in substantial compliance with contract plans and specifications; prepare final estimate of quantities and materials; research and prepare documentation to support the department's position on claims filed against the contract; represent the department at the Claims Review Board and testify in court when necessary.

UNIVERSITY OF NEVADA

UNR - Electrical Engineering Department

Perform research activities to develop and design projects and establish procedures and protocol; maintain laboratory standards to include calibrating and certifying electronic instrumentation for the department, the college, State agencies and outside industry; calibrate scientific instrumentation to manufacturer's specifications; certify calibration traceable to the National Institute of Standards and Technology; certify compliance to Federal Communications Commission rules and regulations; and analyze and repair defective laboratory instrumentation.

Prepare and present lectures to students to include organizing class content, grading student performance, establishing laboratory procedures, and stimulating creative thought processes in the students; assist faculty with the design, operation and teaching of all electrical engineering laboratory classes.

Maintain UNIX computers and a working knowledge of computer networking tools and languages sufficient to write, port and debug programs.

OPTIONS

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UNIVERSITY OF NEVADA (cont'd)**UNLV - Facilities Management**

Manage engineering projects for the University by developing project requirements; coordinating design of facilities and support system to meet client needs as defined by project scope and planning; reviewing design drawings and specifications for compliance with established standards and codes; preparing purchasing documents; coordinating construction activity with campus and community agencies to include building occupancy, street closures and scheduled utility outages; resolving problems as they arise with contractors, architects, clients and local and State agencies; coordinating campus telecommunication/telemmedia and utilities systems expansion and modifications; and compiling, organizing and distributing final project documents for project closeout.

Manage the fire and safety programs by monitoring campus activity to include scheduling inspections and testing, new installations, retrofit projects, department trouble calls, and federal and State inspections; initiating, coordinating and following up on corrective action; and preparing program reports. Manage hazardous materials activities to comply with federal, State, and local requirements for hazardous equipment monitoring and disposal.

MINIMUM QUALIFICATIONS**SPECIAL NOTES AND REQUIREMENTS:**

- * Positions within this class may require specialized education and experience which will be identified at the time of recruitment.
- * Specific duties and knowledge, skills and abilities for those options not described in this class specification may be determined at the time positions are classified. Positions being classified must meet the entry level knowledge, skills and abilities common to all options. Judgment must be applied in determining the degree to which a specific position being classified meets the intent of the class concepts.
- * Employees in this class who are not registered professional engineers may not represent themselves as such to other persons or entities.

EDUCATION AND EXPERIENCE: Bachelor's degree from an accredited college or university with a degree in civil engineering or a closely related engineering field and four years of professional engineering experience of which two years must have been in a supervisory capacity; **OR** certified as an Engineering Intern and four years of professional engineering experience of which two years must have been in a supervisory capacity; **OR** two years of experience comparable to the Staff II, Associate Engineer or Supervisor II, Associate Engineer; **OR** four years of professional engineering experience with two years of experience comparable to the Supervisor I, Associate Engineer. (*See Special Notes and Requirements*)

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):

ALL OPTIONS

Working knowledge of: engineering calculations requiring trigonometry, geometry and analytical thinking. **General knowledge of:** purchasing rules, regulations, policies and work as part of a team. **Knowledge of:** principles and practices for engineering analysis and calculations. **Ability to:** supervise staff including organizing work flow, delegating responsibility, training, evaluating subordinate effectiveness and administering necessary discipline; establish and maintain cooperative working relationships with other

OPTIONS

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MINIMUM QUALIFICATIONS (cont'd)**ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES** (cont'd)**ALL OPTIONS** (cont'd)

department divisions' personnel and outside entities; perform effectively under conditions of fluctuating workload; make oral group presentations to provide information or explain procedures, policies and engineering designs; discuss a variety of job-related topics on short or no notice; speak clearly and distinctly using correct English to explain design and construction methodology; analyze information, problems, situations, practices or procedures to define the problem or objective, identify relevant concerns or factors, identify patterns, tendencies and relationships, formulate logical and objective conclusions, and recognize alternatives and their implications; organize material, information and people in a systematic way to optimize efficiency and minimize duplication of effort; perform a variety of duties often changing from one task to another of a different nature; perform repetitive work according to set procedures, sequence and pace; perform under the stress of frequent interruptions and/or distractions; prioritize assignments to complete work in a timely manner when there are changes in workload, changes in assignments, pressures of deadlines, and heavy workload; work independently and follow through on assignments with minimal direction; operate personal computers; reason persuasively to encourage acceptance of solutions to problems; mediate between contending co-workers and foster harmonious working relationships; maintain composure and objectivity in the face of resistance, indifference or hostility; write employee work performance evaluations that fairly portray individual performance without favoritism or bias; read and understand technical reports that may utilize abbreviated wording and specialized coding.

DEPARTMENT OF TRANSPORTATION**Materials and Testing Division**

Geotechnical Branch - Working knowledge of: strength of materials principles, soil testing principles and techniques, and rock testing principles and techniques to obtain engineering characteristics of soils and rocks; soil engineering, soil dynamics, ground anchors, tiebacks, design and analysis of drilled shafts, soil slopes and landslide mitigation techniques, rock slopes and rock fall mitigation techniques, design and analysis of retaining walls, geotextile design and construction techniques, shallow foundations and settlement analysis to conduct geotechnical engineering analysis and design; soil identification principles to recognize trouble soils such as expansive, collapsible, and frost susceptible soils; subsurface investigation techniques to get information on the nature and types of soils and rocks underlying the project site; subsurface sampling and testing techniques. **Knowledge of:** surveying instruments and field techniques to locate project sites and field locations; geologic field techniques such as detailed line mapping to obtain geologic information. **Ability to:** write technical reports on geotechnical engineering problems in order to describe type and nature of the problem and its solution; inspect geotechnical engineering designs and analysis and judge whether they are within the prescribed engineering standards; modify and/or adapt geotechnical engineering designs, procedures or methods in order to achieve a logical and engineering correct solution to a problem; analyze complex technical data such as seismic behavior of soils using logic and quantitative reasoning; read geological, topographical and hydrological maps; use soil mechanics testing equipment such as triaxial, resilient modulus, consolidometer, and direct shear to conduct soil testing.

Pavement Testing - Detailed knowledge of: engineering properties materials, engineering principles, practices and theory and terminology related to highway construction. **Ability to:** perceive and define cause and effect relationships in pavement performance, constructability and specifications.

Structural/Chemical Branch - Structural Inspection Section: Detailed knowledge of: non-destructive inspection and testing procedures; engineering properties of construction materials; engineering principles, practices and theory and terminology related to highway construction.

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MINIMUM QUALIFICATIONS (cont'd)

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (cont'd)

DEPARTMENT OF TRANSPORTATION (cont'd)**Road Design Division**

Roadway Design - Detailed knowledge of: how roadway construction plans are put together. **General knowledge of:** roadway construction. **Knowledge of:** principles of engineering drafting including nomenclature, methods, conventional symbols and sources of information; metric system units and United States equivalents to design projects with information received in either system; related outside transportation agencies, their services, roles and responsibilities. **Ability to:** compare/inspect specifications and items of work and judge whether they are similar to or different from prescribed standards; analyze complex technical data such as new specifications using logic and quantitative reasoning; modify and/or adapt new designs, procedures or methods to construct better highways; apply previous experience to solve specific design problems and put a construction plan together so that field personnel can use the construction plans.

Traffic Design/Sign and Pavement Marking - Working knowledge of: principles of engineering drafting including nomenclature, methods, symbols and sources of information. **Knowledge of:** related outside transportation agencies, their services, roles and responsibilities.

Districts

Working knowledge of: reference manuals applicable to the job. **Knowledge of:** engineering principles and practices as applied to highway construction; read and evaluate complex critical path method project schedules. **Ability to:** establish and maintain cooperative working relationships with contractors and their personnel, supervisors, subordinates, divisional personnel and other federal, State, county and city agencies; inspect construction items and determine whether or not they differ from prescribed standards; make a correct interpretation of the contract plans and special provisions without lengthy decision review; compose letters and memos to contractors, district office, the construction office, other divisions, other agencies and entities, and the public; compose and write a contract change order within established guidelines, with clarity and accuracy; write a comprehensive daily diary using proper technical and descriptive forms to document the facts and project status; read and comprehend materials safety data sheets on all materials used in highway construction; review inspector reports, test reports, and other field documentation to effectively monitor the progress of the project; maintain a professional relationship with the contractor while obtaining the goals and objectives of the department; negotiate with the contractor changes in work that occur during the course of the project.

UNIVERSITY OF NEVADA**UNR - Electrical Engineering Department**

Knowledge of: electronics with emphasis on radio frequency and computer hardware to design, construct, test and troubleshoot circuits and devices; various computer aided design programs; fiber optics, radio frequency devices, laser optics, and microwave equipment; analog and digital circuits; common microprocessors and assembling language; the UNIX operating system and associated tools; UNIX system administration and networking. **Ability to:** prepare and present lectures to engineering classes on technical subjects; use electronic instruments such as oscilloscopes, protocol analyzers, logic analyzers, power supplies, digital multimeters, counters/timers; use a variety of common hand tools; design printed circuit boards; fabricate circuit boards including the layout, loading, soldering, wire wrapping, and testing; fabricate cables; use complex machine tools; teach students to use complex machine tools; weld, cut and braze metals; write, port and debug programs; administer UNIX computers and integrate them into a networked environment.

OPTIONS

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MINIMUM QUALIFICATIONS (cont'd)

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (cont'd)

UNIVERSITY OF NEVADA (cont'd)**UNLV - Facilities Management****Knowledge of:** federal, State and local regulations for hazardous materials handling, storage and disposal.**Ability to:** coordinate scheduling, testing and maintenance requirements to accommodate department activities, new construction and system viability; communicate and coordinate implementation of the Hazard Communication Program requirements within the department.

FULL PERFORMANCE KNOWLEDGE, SKILLS AND ABILITIES (typically acquired on the job):

ALL OPTIONS

Working knowledge of: current projects and assignments and their respective priority. **General knowledge of:** State equal opportunity and affirmative action plans; department budget preparation and monitoring techniques. **Knowledge of:** occupational safety hazard regulations and department's safety regulations; where to go within the organization for needed information. **Ability to:** gauge time requirements for completion of an engineering assignment through knowledge of personnel, workload and the specific assignment's degree of difficulty; extract feedback for determination of assignment comprehension and understanding from subordinates; change and modify procedures to achieve needed results in engineering products when unusual circumstances dictate.

DEPARTMENT OF TRANSPORTATION**Materials and Testing Division**

Geotechnical Branch - Working knowledge of: computer programs used in geotechnical section for engineering analysis; software programs such as automated testing systems, and Microsoft Windows to be able to conduct resilient modulus testing; software programs used to prepare geotechnical and laboratory reports, charts, graphs, tables and forms. **General knowledge of:** rock blasting, tunneling techniques and principles, environmental engineering, construction engineering, structural engineering, and transportation engineering to be able to recognize potential engineering problems and hazards which could affect a geotechnical design. **Knowledge of:** geotechnical field instrumentation techniques such as slope indicator and settlement indicator to monitor structural behavior after construction. **Ability to:** use electronic instrumentation to conduct field and laboratory testing.

Pavement Testing - Ability to: compare materials used in highway construction and judge whether they are similar to or different from prescribed standards; analyze complex technical data such as the Pavement Management System pavement condition data and National Weather Service environmental data using logic and quantitative reasoning.

Structural/Chemical Branch - Structural Inspection Section: Ability to: manage and allocate space, equipment and material resources including developing utilization plans and justifying acquisitions.

Road Design Division

Roadway Design - Knowledge of: different herbicides, insecticides, fertilizers and plant foods and how to use them appropriately to maintain the growth of grasses, trees, shrubs and flowers. **Ability to:** manage a design team into an effective unit; delegate work to staff so that clear and accurate construction plans are reviewed or designed in a reasonable time frame.

MINIMUM QUALIFICATIONS (cont'd)

FULL PERFORMANCE KNOWLEDGE, SKILLS AND ABILITIES (cont'd)

DEPARTMENT OF TRANSPORTATION (cont'd)

Road Design Division (cont'd)

Traffic Design/Sign and Pavement Marking - Knowledge of: pavement markings and applications; sign usage and placement.

Traffic Design/Signal and Lighting - Detailed knowledge of: federal, State and department rules, regulations, laws, policies and procedures regarding the design, construction, operation and maintenance of traffic signal and lighting systems. **Working knowledge of:** the current National Electric Code regarding all phases of the construction, maintenance and powering of signal and lighting systems. **Knowledge of:** all components to design, construct, operate and maintain signal and lighting systems. **Ability to:** research issues and prepare recommendations using federal and State laws, regulations and policies, industry manuals and specifications and other reference material; prepare written technical reports and interlocal agreements with county and city officials for the purpose of constructing and maintaining signal and lighting systems; read technical documents, references, plans and reports related to the designs and specifications of signal and lighting components; explain technical aspects of signal and lighting designs to others.

Districts

Ability to: supervise a construction crew including organizing work flow to accomplish established objectives, delegating responsibility, training, evaluation subordinate effectiveness and administering necessary discipline; modify and/or adapt standard designs, procedures or methods to the construction of department projects.

UNIVERSITY OF NEVADA

UNR - Electrical Engineering Department

Working knowledge of: purchasing practices (including the use of purchase orders, blanket purchase orders and limited purchase orders, annual and biennial budgets, and grants) to order parts and systems, initiate and administer support contracts, manage a budget, produce project proposals, and to ensure the orderly processing of contracts and purchases; DOS, including loading and unloading software packages, controlling disk space usage, debugging software problems, developing applications and acting as a department resource on DOS; the edlin editor in the DOS environment to edit files and tailor the DOS environment. **Knowledge of:** information sources within the department, university, academic and commercial community to obtain correct information and to know whether information can be passed on to other levels.

UNLV - Facilities Management

Working knowledge of: established design standards and building and life safety codes for facility construction; building and life safety codes to identify, recommend, or initiate corrective action. **Knowledge of:** the University's purchasing policies and procedures. **Ability to:** read blueprints and analyze/evaluate architect and engineering design drawings and specifications of building system components for functional integrity.

This class specification is used for classification, recruitment and examination purposes. It is not to be considered a substitute for work performance standards for positions assigned to this class.

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ESTABLISHED:	7/1/93P
	8/31/92PC
REVISED:	11/17/93UC
REVISED:	9/18/95UC
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